d.) Remarks

Reconsideration of this application in view of the amendments made to the claims and the following remarks is respectfully requested.

Examiner Conversation Summary

A telephone conversation between the Examiner and Lynn Cameron was held on Friday, June 13, 2003. The rejections were clarified such that the Examiner stated claims 32-40 were only rejected under 35 USC §103, and not under §102 as listed in the Office Action. In addition, the Examiner stated that the §103 rejection should read that claims 32-40 were unpatentable over Almogy in view of Swift, and not Swift in view of Almogy.

The §102 Rejection

Claims 1-5, 10-18, 20, 32-40 and 47 were rejected under 35 U.S.C. § 102(e) as being anticipated by Almogy (US 6,236,454 B1). The Office Action asserts that Almogy teaches an apparatus comprising a light source, optics and a detection component that provides output information representative of the position of the target at the first and second locations.

Claim 1 has been amended to clarify the recitation of a measurement device for simultaneously measuring the displacement of multiple locations on a target relative to a reference. The measurement device includes a light source for producing a light beam; optics for configuring the light beam as first and second differentiable beam portions, and for directing the first and second beam portions toward a target to be measured; and a position sensitive detection component located to intercept first and second images created by simultaneous incidence of the first and second beam portions at first and second locations, respectively, on the target, and to provide output information representative of the displacement of the target at the first and second locations relative to a reference based on the position of impingement of the first and second images on the position sensitive detection component. The measurement device allows for the simultaneous measurement of displacement relative to a reference at two points on a target, thereby eliminating the need to move either the measurement device or the target to obtain usable measurement information at each of the two points.

In contrast, the specification of Almogy teaches an inspection system using a scanning system and dark field imaging to view multiple moving spots on a surface. [Abstract]. The imaging unit includes multiple photodetectors, one per spot, mounted so as to separate the light scattered from the different scan lines. [Abstract]. The photodetectors are light detectors that respond to the intensity of the light collected on the detector so as to detect the shape of features on the surface from different viewing perspectives. [Background].

The specification of Almogy fails to teach or suggest a measurement device including the recited features of amended claim 1. In particular, Almogy fails to teach or suggest a measurement device and, instead, teaches an inspection system that illuminates an article to be inspected by one or more detectors and has multiple scanning beams. Nor does Almogy teach or suggest a measurement device for simultaneously measuring the displacement of multiple points on a target relative to a reference. In addition, Almogy fails to teach or suggest a measurement device including a light source, optics and a position sensitive detection component where the detection component is located to intercept first and second images created by simultaneous incidence of the first and second beam portions at first and second locations, respectively, on the target. The detection component of claim 1 also provides output information representative of the displacement of the target at the first and second locations relative to a reference based on the position of impingement of the first and second images on the position sensitive detection component. The specification of Almogy fails to teach or suggest the use of the multiple detectors to provide any distance information usable to calculate or otherwise determine the displacement of the target from a reference. Therefore, Almogy fails to anticipate amended claim 1 and Applicants respectfully request withdrawal of the rejection and allowance of this claim.

In like manner, claim 47 has been amended to recite a method of measuring a distance between a target and a reference comprising the steps of providing a light beam; splitting the light beam into a plurality of differentiable beam portions; directing the plurality of differentiable beam portions toward a target to be measured; detecting images created by simultaneous incidence of the plurality of differentiable beam portions on the target using

position sensitive detecting components; and analyzing the output of the position sensitive detecting components due to the location of the detected images on the position sensitive detecting components to calculate a desired distance measurement between the target and the reference.

For reasons similar to those provided above with respect to amended claim 1, Almogy fails to teach or suggest the method recited in this claim. In particular, Almogy fails to teach or suggest a method of measuring a distance between a target and a reference. Almogy also fails to teach or suggest detecting images using position sensitive detecting components or analyzing the output of these detecting components due to the location of the detected images on the detecting components to calculate the desired distance measurement. Therefore, Almogy fails to anticipate amended claim 47. Applicants respectfully request withdrawal of this rejection and allowance of this claim.

Claims 2-5, 10-18 and 20 depend from amended claim 1. Therefore, these claims are allowable for at least the same reasons provided above. Applicants respectfully request withdrawal of the rejections and allowance of these claims.

In addition, amended claim 3 is allowable over Almogy in that it recites the measurement device of claim 1 wherein the first and second locations on the target comprise the same location. As stated in Almogy, the "distance 2D between the spots must be large enough to ensure that the residual light (as defined by the imaging demands) scattered from one spot does not enter the collection channels of the other spots. Typically, this condition requires the spots to be at least a multiple of the spot width apart." [Almogy, Col. 4, lines 53-58]. "As discussed hereinabove, the spots must be separated." [Almogy, Col. 4, line 65, *emphasis added*]. Therefore, amended claim 3 is not anticipated by Almogy and Applicants respectfully request withdrawal of the rejection and allowance of this claim.

Amended claim 11 is also patentable over Almogy in that it recites the measurement device of amended claim 1 having first and second detectors wherein the first and second detectors communicate with a microprocessor that calculates displacement data for the first and second locations on the target relative to the reference. As stated above, Almogy fails to teach a measurement device at all, let along one that communicates with a microprocessor to

calculate displacement data for the points on the target being measured. Therefore, Almogy fails to anticipate amended claim 11 and Applicants respectfully request withdrawal of the rejection and allowance of this claim.

As set forth in the Examiner Conversation Summary, claims 32-40 were not rejected under §102, but rather only under §103, as discussed below. As is evident by this clarification from the Examiner, neither Almogy nor Swift anticipate these claims.

The §103 Rejection

Claims 32-40 were rejected under 35 U.S.C. § 103(a) as being anticipated by Almogy in view of Swift (US 5,636,013), per the Examiner's clarification of the rejections as set forth above. The Office Action asserts that the combination of Almogy and Swift teaches a method for measuring the z-height of a head suspension comprising the steps recited in claim 32.

Claim 32 has been amended to clarify the recitation of a method of measuring a z-height distance relative to a reference at two locations on a disk drive head suspension. The method includes the steps of providing a light beam; splitting the light beam into first and second differentiable beam portions; directing the first and second differentiable beam portions toward the two locations to be measured on the head suspension and causing the beam portions to be reflected from the head suspension wherein paths of the beam portions vary as a function of the z-height of the two locations with respect to a reference; intercepting first and second images created by simultaneous incidence of the first and second differentiable beam portions on the target with a position sensitive detection component; and analyzing displacement data collected by the position sensitive detection component based upon a location of interception of the first and second images by the position sensitive detection component to calculate a desired z-height distance measurement for the two locations on the head suspension relative to a reference.

The theoretical combination of Almogy and Swift fails to teach or suggest the method of amended claim 32. Almogy fails to teach or suggest a method of measuring anything, let alone measuring a z-height distance relative to a reference at two locations on a disk drive suspension. Instead, Almogy teaches inspecting a surface using a scanning and

thus moving beam or beams, and detecting the shape of features. Among other things, Almogy also fails to teach the method steps of intercepting the differentiated images with a position sensitive detection component and analyzing displacement data collected by this component based upon a location of interception of the first and second images by the detection component to calculate the z-height distance measurement for the two locations on the suspension.

Swift teaches an instrument that combines the measurement of static attitude with the measurement of z-height for a suspension assembly flexure. Swift provides a single beam point range sensor 12 including a light source 13 and a light sensitive sensor array 14. The light beam 18 strikes the suspension assembly 50 and reflects off the measurement point 52 to strike the array 14. The angle of incidence and angle of reflection are constant so that the z-height distance of the measurement point 52 can be calculated by triangulation. [Swift, Col. 3, lines 55-67; Col. 4, lines 1-4].

Swift fails to teach or suggest a method of measuring z-height distance at two locations simultaneously, including the steps of splitting the light beam into first and second differentiable beam portions, directing these beam portion toward two locations to be measured on the suspension, intercepting first and second images created by simultaneous incidence of the beam portions on the suspension with a position sensitive detection component, or analyzing displacement data collected by the position sensitive detection component based upon a location of interception of the first and second images by the position sensitive detection component to calculate a desired z-height distance measurement for the two locations on the head suspension relative to a reference.

The theoretical combination of Almogy and Swift fails to render claim 32 obvious because there is no motivation in either reference to combine with the other of the references. Almogy gives no indication or suggestion of modifying its inspection system to provide a height measurement device, but rather focuses on the use of multiple beams in a scanning inspection system. Not only does Almogy provide a significantly different function with its scanning/moving inspection system than the presently claimed method of measuring z-height, but the use of the reflected images differs significantly from measurement transfer

function of the present invention. Swift also gives no indication or suggestion of modifying its combined static attitude and distance measurement instrument to a simultaneous multiple point measurement method, but rather focuses on the need to combine height measurement and static attitude measurement into a single processing step and device. The fact that both systems use a laser beam to provide a light source is not enough to motivate either to look to the other. Therefore, the theoretical combination does not render claims 32-40 unpatentable and Applicants respectfully request withdrawal of the rejection.

Claims 33-40 depend from amended claim 32 and thus are patentable for at least the same reasons set forth above. Therefore, Applicants respectfully request withdrawal of the rejection and allowance of these claims.

Allowable Subject Matter

Claims 6-9, 19, 21-31 and 41-46 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 6-9, 19, and 21-31 all depend from allowable amended claim 1 and thus are allowable for at least the same reasons. Claims 41- 46 all depend from allowable amended claim 32, and thus are allowable for at least the same reasons. Therefore, Applicants respectfully request withdrawal of the objections and allowance of all claims.

CONCLUSION

All of the claims remaining in this application are in condition for allowance. The prompt issuance of a notice to that effect is respectfully solicited. If there are any remaining questions, the Examiner is requested to contact the undersigned at the number listed below.

Respectfully Submitted,

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By: _____

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